

IN THE CLAIMS:

Please cancel claims 1-25 without prejudice and add the following new claims:

~~126~~ -26. A process for the production of paper which comprises:

- (i) providing a suspension containing cellulosic fibres, and optional fillers;
- (ii) adding to the suspension drainage and retention aids comprising an anionic microparticulate material and a cationic organic polymer having a non-aromatic hydrophobic group which is an alkyl group containing at least 3 carbon atoms selected from the group consisting of n-propyl, iso-propyl, n-butyl, iso-butyl, t-butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl and dodecyl; and
- (iii) forming and dewatering the obtained suspension on a wire.

27. The process of claim 26, wherein the cationic organic polymer is a vinyl addition polymer comprising in polymerized form at least one non-cationic monomer having a non-aromatic hydrophobic group and at least one cationic monomer.

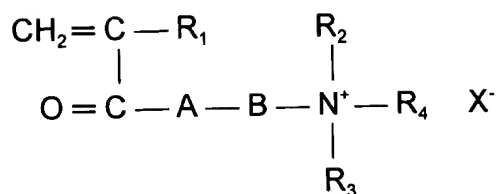
28. The process of claim 26, wherein the hydrophobic group is attached to a nitrogen or oxygen which, in turn, is attached to the polymer backbone via a chain of atoms.

29. The process of claim 26, wherein the hydrophobic group is an alkyl group containing from 4 to 8 carbon atoms.

30. The process of claim 26, wherein the cationic organic polymer is an acrylamide-based polymer.

31. The process of claim 26, wherein the cationic organic polymer comprises in polymerized form a cationic monomer having a non-aromatic hydrophobic group represented by the general formula (I):

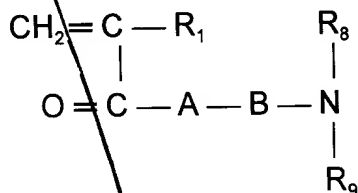
(I)



wherein R_1 is H or CH_3 ; R_2 and R_3 are each an alkyl group having from 1 to 2 carbon atoms; A is O or NH; B is an alkylene group of from 2 to 4 carbon atoms or a hydroxy propylene group; and R_4 is a substituent containing an alkyl group containing from 4 to 8 carbon atoms; and X^- is an anionic counterion.

32. The process of claim 26, wherein the cationic organic polymer comprises in polymerized form a non-ionic monomer having a non-aromatic hydrophobic group represented by the general formula (IV):

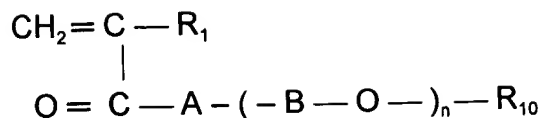
(IV)



wherein R_1 is H or CH_3 ; A is O or NH; B is an alkylene group of from 2 to 4 carbon atoms or a hydroxy propylene group or, alternatively, A and B are both nothing whereby there is a single bond between C and N ($\text{O}=\text{C}-\text{NR}_8\text{R}_9$); and R_8 and R_9 are each H or a substituent containing an alkyl group having from 1 to 6 carbon atoms, at least one of R_8 and R_9 being a substituent containing an alkyl group having from 3 to 4 carbon atoms.

33. The process of claim 26, wherein the cationic organic polymer comprises in polymerized form a non-ionic monomer having a non-aromatic hydrophobic group represented by the general formula (V):

(V)



wherein R_1 is H or CH_3 ; A is O; B is an alkylene group of from 2 to 4 carbon atoms; n is an integer of at least 1; and R_{10} is alkyl having from 3 to 12 carbon atoms.

34. The process of claim 26, wherein the cationic organic polymer is a vinyl addition polymer prepared from a monomer mixture comprising from 5 to 25 mole% of monomer having a non-aromatic hydrophobic group, and from 95 to 75 mole% of other copolymerizable monomers.

35. The process of claim 26, wherein the anionic microparticulate material is silica-based particles or bentonite.

36. The process of claim 26, wherein the drainage and retention aids further comprise a low molecular weight cationic organic polymer.

37. The process of claim 36, wherein the drainage and retention aids further comprise a low molecular weight cationic organic polymer.

38. The process of claim 26, wherein the suspension that is dewatered on the wire has a conductivity of at least 2.0 mS/cm.

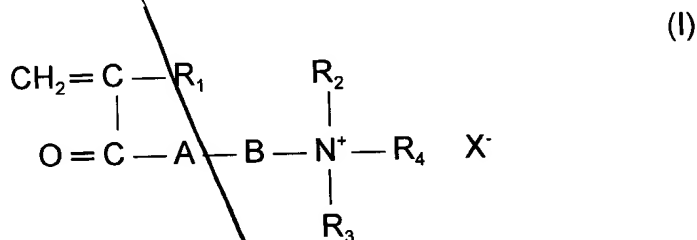
39. The process of claim 26, wherein the step of dewatering yields a wet web of paper and white water, and the process further comprises recirculating the white water and optionally introducing fresh water to form a suspension containing cellulosic fibres, and optional fillers, to be dewatered, wherein the amount of fresh water introduced is less than 30 tons per ton of dry paper produced.

40. The process of claim 39, wherein less than 10 tons of fresh water is introduced into the process per ton of dry paper produced.

b34 41. A process for the production of paper which comprises:

- (i) providing a suspension containing cellulosic fibres, and optional fillers;
- (ii) adding to the suspension drainage and retention aids comprising a cationic organic polymer and anionic silica-based particles; and
- (iii) forming and dewatering the suspension on a wire;

wherein the cationic organic polymer comprises in polymerized form one or more monomers comprising at least one cationic monomer having a non-aromatic hydrophobic group represented by the general formula (I):



wherein R_1 is H or CH_3 ; R_2 and R_3 are each H or an alkyl group having from 1 to 3 carbon atoms; A is O or NH; B is an alkylene group of from 2 to 8 carbon atoms or a hydroxy propylene group; R_4 is a substituent containing a non-aromatic hydrophobic group containing from 3 to 12 carbon atoms; and X^- is an anionic counterion.

42. The process of claim 41, wherein the non-aromatic hydrophobic group contains from 4 to 8 carbon atoms.

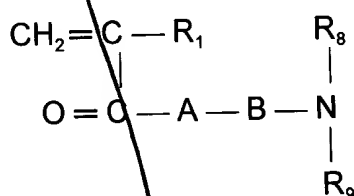
43. The process of claim 41, wherein the anionic silica-based particles have a specific surface area of at least $50 \text{ m}^2/\text{g}$.

sh35

44. A process for the production of paper which comprises:

- (i) providing a suspension containing cellulosic fibres, and optional fillers;
- (ii) adding to the suspension drainage and retention aids comprising a cationic organic polymer and anionic silica-based particles; and
- (iii) forming and dewatering the suspension on a wire;

wherein the cationic organic polymer comprises in polymerized form one or more monomers comprising at least one non-ionic monomer having a non-aromatic hydrophobic group represented by the general formula (IV):



(IV)

wherein R_1 is H or CH_3 ; A is O or NH; B is an alkylene group of from 2 to 8 carbon atoms or a hydroxy propylene group or, alternatively, A and B are both nothing whereby there is a single bond between C and N ($\text{O}=\text{C}-\text{NR}_8\text{R}_9$); and R_8 and R_9 are each H or a substituent containing a non-aromatic hydrophobic group having from 1 to 6 carbon atoms, at least one of R_8 and R_9 being a substituent containing a non-aromatic hydrophobic group having from 2 to 6 carbon atoms.

45. The process of claim 44, wherein the non-aromatic hydrophobic group contains from 3 to 4 carbon atoms.

sub 35

46. A cationic vinyl addition polymer comprising in polymerized form at least one non-cationic monomer having a non-aromatic hydrophobic group, at least one cationic monomer and (meth)acrylamide, wherein the cationic vinyl addition polymer is prepared from a monomer mixture comprising from 75 to 95 mole% of (meth)acrylamide.

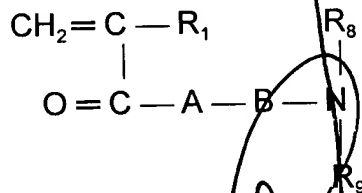
47. The cationic vinyl addition polymer of claim 46, wherein the (meth)acrylamide is acrylamide.

48. The cationic vinyl addition polymer of claim 46, wherein the non-aromatic hydrophobic group is attached to a nitrogen or oxygen which, in turn, is attached to the polymer backbone via a chain of atoms.

49. The cationic vinyl addition polymer of claim 46, wherein the non-aromatic hydrophobic group is an alkyl group containing from 3 to 12 carbon atoms.

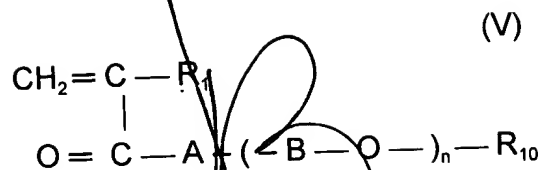
50. The cationic vinyl addition polymer of claim 46, wherein the cationic vinyl addition polymer comprises in polymerized form a non-ionic monomer having a non-aromatic hydrophobic group represented by the general formula (IV):

(IV)



wherein R_1 is H or CH_3 ; A is O or NH; B is an alkylene group of from 2 to 4 carbon atoms or a hydroxy propylene group or, alternatively, A and B are both nothing whereby there is a single bond between C and N ($\text{O}=\text{C}-\text{NR}_8\text{R}_9$); and R_8 and R_9 are each H or a substituent containing an alkyl group having from 1 to 6 carbon atoms, at least one of R_8 and R_9 being a substituent containing an alkyl group having from 2 to 6 carbon atoms.

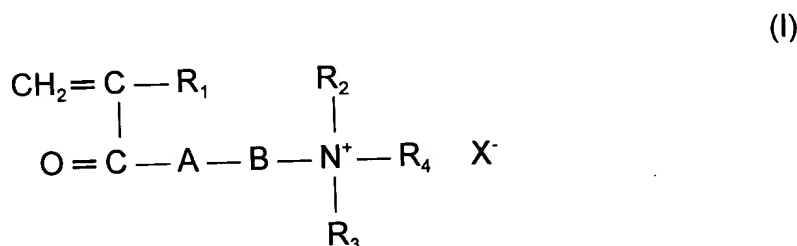
51. The cationic vinyl addition polymer of claim 46, wherein the cationic vinyl addition polymer comprises in polymerized form a non-ionic monomer having a non-aromatic hydrophobic group represented by the general formula (V):



wherein R_1 is H or CH_3 ; A is O or NH; B is an alkylene group of from 2 to 4 carbon atoms; n is an integer of at least 1; and R_{10} is alkyl having at least 2 carbon atoms.

52. The cationic vinyl addition polymer of claim 46, wherein the non-aromatic hydrophobic group is an alkyl group selected from n-propyl, iso-propyl, n-butyl, iso-butyl and t-butyl.

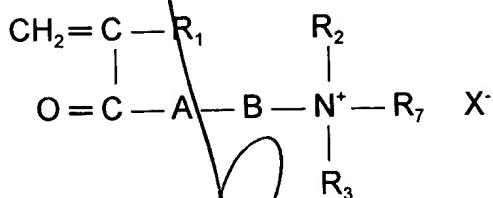
53. The cationic vinyl addition polymer of claim 46, wherein the cationic vinyl addition polymer comprises in polymerized form a cationic monomer represented by the general formula (I):



wherein R_1 is H or CH_3 ; R_2 and R_3 are each H or an alkyl group having from 1 to 3 carbon atoms; A is O or NH; B is an alkylene group of from 2 to 4 carbon atoms or a hydroxy propylene group; R_4 is a non-aromatic hydrocarbon group containing from 4 to 8 carbon atoms; and X^- is an anionic counterion.

54. The cationic vinyl addition polymer of claim 46, wherein the cationic vinyl addition polymer comprises in polymerized form a cationic monomer represented by the general formula (III):

(III)



wherein R₁ is H or CH₃; R₂ and R₃ are each H or an alkyl group having from 1 to 3 carbon atoms, suitably 1 to 2 carbon atoms; A is O or NH; B is an alkylene group of from 2 to 8 carbon atoms, suitably 2 to 4 carbon atoms, or a hydroxy propylene group; R₇ is H, an alkyl group having from 1 to 3 carbon atoms, a benzyl group or a phenylethyl group; and X⁻ is an anionic counterion.

55. The cationic vinyl addition polymer of claim 46, wherein the cationic vinyl addition polymer is prepared from a monomer mixture comprising from 5 to 25 mole% of non-ionic monomer having a non-aromatic hydrophobic group, and from 95 to 75 mole% of other copolymerizable monomers. - -

IN THE ABSTRACT:

Please add the following abstract on a separate page after the claims:

- Abstract

The present invention relates to a process for the production of paper from a suspension containing cellulosic fibres, and optional fillers, comprising adding to the suspension drainage and retention aids comprising a cationic organic polymer and anionic microparticulate material, forming and dewatering the suspension on a wire, wherein the cationic organic polymer has a non-aromatic hydrophobic group. The invention further relates to a cationic vinyl addition polymer comprising in polymerized form at least one non-cationic monomer having a non-aromatic hydrophobic group and at least one cationic monomer. - -